who are suitable for a transfemoral approach under local anaesthesia. Early discharge has been shown to be safe for a select patient population. However same day admission for TAVI will also influence hospital length of stay and there are few data on the feasibility and safety of this approach.

Methods A same day admission programme was commenced in our unit in April 2017, supported by the introduction of a TAVI Specialist Nurse. We performed a retrospective, single-centre audit to compare the patients treated under the same day admission programme (same day group) with a control group who were admitted the day before their procedure (standard care group) over 12 months period preceding the new programme. Length of stay, baseline and procedural characteristics (table 1), and in hospital and 30-day follow-up outcomes (table 2) were analysed. Electronic data and medical records were used to collect data on demographics, baseline characteristics, procedural details, hospital outcome and long-term outcome.

Results A total of 77 patients in the standard care group and 102 patients in the same day group were analysed. In the same day group, same day admission was planned in 97 patients (95%) and was successful in 91 (94%) patients. The incidence of same day cancellation was lower in the same day group (11% vs 2%). TAVI was performed successfully in 89 (98%) patients in the same day group and 77(100%) in the standard care group. The median length of stay in the same day group was lower (1 vs 2; $p<0.005$) than that of the control group, there was no difference in mortality, procedural complications or re-admission rates. Baseline demographics were reported by using descriptive analysis while comparative analysis was used to test the association of different variables.

Conclusion Routine same day admission for TAVI can be safely implemented for patients undergoing transfemoral TAVI with the support of a Specialist Nurse. This led to a shorter length of hospital stay with no detrimental effect on procedure outcomes or readmission rate and has the potential of significant cost savings.

Conflict of Interest no

Abstract 136 Table 1 patient characteristics

Variables	Standard care group	Same day group, all patients	P Value
	N=77	N=97	
Age (mean) (years)	84	82	0.091
Euroscore I (mean)	21	21	0.477
Male (n)	47	59	0.827
Female (n)	30	38	
Chronic Kidney Disease (n)	1	0	
Previous MI (%)	29%	11%	0.003
Prior CABG (%)	19%	20%	0.956
LV dysfunction graded >mild	30%	28%	0.834
COPD	27	18	0.754

Abstract 136 Table 2 patient outcomes

Variables	Standard care group	Same day group	P Value
	n=77	n=97	
Median length of stay (days)	2	1	<.005
30-day mortality (%)	1.3	0	0.260
30-day re-admission (%)	13%	10%	0.582
Tamponade (%)	3%	0%	0.110
Major Vascular injury (%)	3%	0%	0.110
New conduction abnormality requiring pacing (%)	1%	6%	0.064
Cardiogenic shock (%)	0%	1%	0.372
TIA/Stroke (%)	0%	1%	0.372
New hemofiltration/dialysis (%)	0%	1%	0.372

ACHD

137 VALIDATION AND UTILITY OF A NOVEL MAPPING SYSTEM IN ABLATION OF COMPLEX ARRHYTHMIAS IN ADULT CONGENITAL HEART DISEASE: A MULTICENTRE UK STUDY

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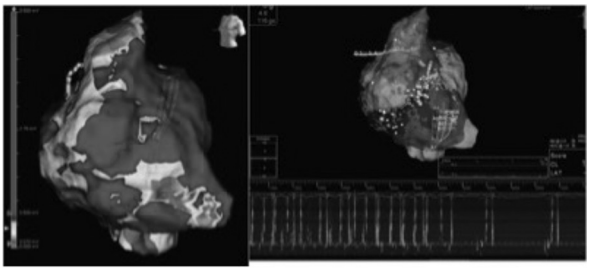
Background Multiple tachycardia circuits in adults with congenital heart disease (ACHD) pose a challenge in identification of the critical isthmus.

Objective We sought to validate a novel wavefront mapping system using the High-density (HD) Grid catheter (Abbott Medical). The system was validated for mapping complex wavefront patterns in atria tachycardia (AT) and defining critical isthmus in areas of scar.

Methods ACHD patients undergoing catheter ablation for ATs across 3 centres were included. Wavefront propagation maps were made using the HD Grid (figure 1). Critical isthmuses of ATs were identified using HD wave solutions and conventional bipolar mapping (independently) and confirmed with entrainment and response to ablation. The mean voltage amplitude within the critical isthmus was determined for HD wave and conventional bipole maps. These analyses were done by two independent observers blinded to the clinical case. Only LAT maps were available for review to ensure point selection for voltage amplitude within the critical isthmus.

Results 50 patients with ACHD underwent mapping using the HD grid. Of these, 19 were excluded (VT ablation, n=2; SVT, n=2; unable to induce or sustain AT, n=15). In the remaining 31 patients, underlying CHD diagnosis was repaired ASD/AVSD (n=9), Percutaneous ASD closure (n=1), AP Fontan (n= 3), AVR/Root replacement (n=3), Mustard TGA (n=4), repaired ToF (n=3), repaired VSD (n=2) and pulmonary atresia/MAPCAs/PVR (n=3), ccTGA (n=1), Ebstein (n=2). The mean procedure and fluoroscopy times were 180±69 and 7±5 min respectively. 58% cases were performed without using any fluoroscopy. HD wave accurately mapped 15 CTI-dependent flutters and 16 micro re-entrant ATs. 472,072 points were collected in an average time of 15 min



Abstract 137 Figure 1 Voltage map (L) and re-entrant map (R) of an AT in an AP Fontan patient made using a 16-pole-4 spline grid catheter using HD wave solutions. Re-entry is seen around an area of functional block, and ablation from the line of block (black) to inferolateral scar resulted in termination to SR at superior end of line (R panel elctrograms).
Across all cases, 472,072 points were collected in an average time of 15 min with HD and 92,026 with conventional bipoles. The mean procedure and fluoroscopy times were 180±69 and 7±5 min respectively. 58% cases were performed without using any fluoroscopy. There were no procedural complications.

with HD and 92,026 with conventional bipoles. Within the critical isthmus, the mean voltage amplitude and number of points using HD wave was higher than conventional bipoles (1.21mV, 92 versus 0.86mV, 76). Critical isthmus sites were missed in 4 micro re-entrant ATs cases using conventional bipoles alone. Ablation at the identified critical isthmus led to arrhythmia termination in all cases. There were no procedural complications. Arrhythmia free survival was 78% at a mean follow-up of 6 months.

Conclusion This novel mapping approach was able to accurately define critical isthmus by mapping complex wavefronts using orthogonal bipoles and the "best voltage duplicate" algorithm in complex CHD patients. HD mapping enabled identification of critical channels in areas of scar, which were missed on conventional mapping due to limitations in bipolar density and single orientations meaning wavefront propagation is not fully defined. This is particularly relevant for multiple micro re-entrant ATs in ACHD.

Figure 1: Voltage map (L) and re-entrant map (R) of an AT in an AP Fontan patient made using a 16-pole-4 spline grid catheter using HD wave solutions. Ablation from line of block (black) to inferolateral scar with termination to SR at superior end of line.

Conflict of Interest Nil

138 NATURAL HISTORY OF ATRIAL FIBRILLATION AND ATRIAL FIBRILLATION ABLATION IN PATIENTS UNDERGOING PERCUTANEOUS ATRIAL SEPTAL DEFECT CLOSURE

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Introduction Atrial septal defects (ASD) often co-exist with atrial fibrillation (AF). Current thinking suggests AF burden may be improved by ASD closure and that catheter interventions should occur before closure to minimise procedural risks. There are few published studies investigating the natural history of AF or ablation outcomes in ASD patients.

Methods: We undertook a retrospective observational study of all percutaneous ASD closure procedures over a 12-year period. Demographic and procedural data were collected. Patients with insufficient documentation were excluded. Outcomes at one year follow-up were collected, including death, freedom from AF (office ECG and symptom-led Holter) and stroke/transient ischaemic attack (TIA). Statistical analysis was undertaken using a two-tailed Fisher's exact T-test. Results: From April 2005 to May 2017, 384 percutaneous ASD closures occurred, with 21 excluded from our dataset due to incomplete data. 69% of patients were female, with a median age of 49 (range 16–84). 88% of patients had only a single defect. 96% of procedures were acutely successful, with 3% repeat procedures. Some residual leak was seen in 10%. 64% had follow-up data at one year: all were alive with 1% incidence of stroke/TIA. 74 (20%) of the cohort had AF prior to closure, in whom 15 (20%) underwent AF ablation (40% paroxysmal, 60% persistent). 11 (73%) were ablated prior to closure. Overall, 80% of the ablation cohort were free from AF at one year with no strokes/TIA, with 100% (N=6/6) success in the paroxysmal group (67% in the persistent group N=6/9; p=0.49). There was no significant difference with AF ablation prior to closure: 82% AF-free at one year, versus 75% AF-free in the ablation after closure group, (p=1). Of those AF patients who did not undergo ablation, 36% were AF-free at one year following closure. Of 289 patients (80%) without any pre-existing AF, rates of progression to AF by one year were remarkably low, with only a single patient receiving a new diagnosis (0.3%). Conclusions: Our data demonstrate favourable short and long-term outcomes supporting ASD closure as a safe intervention with a low failure rate. We characterise the prevalence of AF in this cohort including the natural history with and without ablation. AF ablation enjoys 1-year success rates comparable to a non-ASD closure population. There is a signal, though non-statistically significant, that ablation for paroxysmal AF enjoys increased success rates. Interestingly, we see that following closure, there may be a degree of regression of AF in those even without ablation. We observed very low rates of new AF diagnoses in the follow-up period. Our cohort represents a real-world experience of several hundred consecutive patients undergoing ASD closure over more than a decade, and provides a significant new body of data in a field where many mechanistic and therapeutic questions remain unanswered.

Conflict of Interest Nil

139 IDENTIFICATION OF THE MAJOR GENETIC CONTRIBUTORS TO TETRALOGY OF FALLOT

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Introduction There is strong evidence from familial recurrence studies for a genetic predisposition to sporadic, non-syndromic Tetralogy of Fallot (TOF). TOF is the most common, cyanotic congenital heart disease (CHD) phenotype yet the cause for the majority of cases remains elusive. Rare genetic variants have been identified as important contributors to the risk of CHD, but relatively small numbers of TOF cases have been studied to date.